

REMARKS

Claims 1-48 are pending in the present application. New claims 44-48 have been added. Reconsideration is respectfully requested for the following reasons.

The Office Action indicated that claims 9-22 are allowed. Applicant wishes to thank the Examiner for this earlier indication of allowable subject matter.

The Office Action indicated that claim 3 will be allowable if properly rewritten into independent form including all of the limitations of the base claim and any intervening claims. This claim has been so rewritten.

1. Claims 1, 2, and 4-8.

In the Office Action the Examiner rejected independent claim 1 (and claims 2 and 4-8, which ultimately depend on claim 1) as being unpatentable under 35 U.S.C. § 103(a) over Soileau et al. Patent No. 4,601,765 in view of Grove U.S Patent No. 3,753,182. This rejection is respectfully traversed.

According to the Manual of Patent Examining Procedures §706.02 (j), in order to establish a *prima facie* case of obviousness, three basic criteria must be met. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge general available to one of ordinary skill in the art, to modify the references or to combine reference teachings. Second, there must be a reasonable expectation of success. Third, the prior art references must teach or suggest all of the claim limitations.

Claim 1 defines an electromagnet for use in a brake comprising a polymer impregnated powder metal core containing a coil, and an injected molded material attached to the powder metal core, the said injection molding material comprising a donor material having an elasticity

greater than about 2 million psi that provides a hard protective wear-resistant surface layer, a composite adhering coating layer, and an interim layer that has the ability to act in concert with shearing of the composite adhering coating.

First, neither Soileau et al. '765 nor Grove '182 provide any suggestion or motivation to modify or combine their structures to arrive at the claimed invention. Soileau et al. '765 is directed toward a transformer and inductor intended for discharge lamp ballast circuits and is not intended nor designed to be frictionally engaged with any other surface, i.e. the surface of a brake drum, whereas Grove '182 is directed to an electromagnetic bobbin structure for vehicle brakes. Prior art references used in obviousness determinations must either be in the field of the inventors endeavor or reasonably pertinent to the problems that the inventor solves. MPEP 2141.01. Applicant respectfully submits that a person having ordinary skill in the art of brake systems should not be expected to be aware of nor search in the field of lighting. Therefore, the transformer and indicator of Soileau et al. '765 is not analogous art and as such should not be used towards an obviousness rejection.

The cited references, either alone or in combination, do not teach or suggest any reason to add the polymer impregnated powder metal core, having no frictional surfaces and used for a light ballast, to the magnetic brake assembly of Grove '182. Further, neither the Soileau et al. reference nor the Grove reference teaches or suggest the use of impregnating the powdered metal (PM) core with a polymer. Rather, Soileau et al. '765 teaches that the PM particles are to be "coated" and describes a rather extensive process for applying such a coating. Applicant's invention, on the other hand, involves an impregnated PM. Therefore, Soileau et al. '765 actually teaches away from impregnating the PM. In order to render a claimed invention

unpatentable, the art must reasonably teach or suggest a claimed invention. In other words, the claimed invention cannot be used as a template to piece together teachings of prior art. *In re Fridge*, 23 U.S.P.Q. 2d 1780, 1783 (I Cir. 1992).

Second, even if the references are combined there is no reasonable expectation of success. As stated above, Soileau et al. '765 is directed toward a transformer and inductor intended for a discharge lamp ballast circuit and is not intended nor designed to be frictionally engaged with any other surface, i.e. the surface of a brake drum. Soileau et al. '765 describes that one of the overcoats it uses is a "polymer having some elasticity and the ability to flow under pressure" (column 2, lines 59-61). This material would not stand up to the high temperature and pressure that are created in a brake system under load. Furthermore, the PM material is coated with a silicone overcoat. Silicone is a very low friction material which even at very thin coating layers can adversely affect braking. Because of this, one of ordinary skill in the art, at the time of the invention, would not have had a reasonable expectation of success even if the cited references could be combined to reach the claimed invention.

Third, the references cited by the Office Action cannot be combined to arrive at the claimed invention. This is in great part to the fact that the references do not teach or suggest all of the claim limitations as required by the third criteria of the test for obviousness. Neither reference teaches an injection molded material which is impregnated with a polymer, comprises a donor material having an elasticity greater than about 2 million psi, nor a composite adhering coating layer, nor an interim layer that has the ability to act in concert with shearing of said composite adhering coating. Therefore, Applicant respectfully submits that independent claim 1 is in condition for allowance and respectfully requests allowance thereof.

Claims 2 and 4-8 are dependent on allowable claim 1 and are allowable for that reason. Moreover, Applicant respectively submits that these claims are allowable since they define non-obvious combinations of the subject matter of claim 1. Therefore, Applicant respectively submits that the invention of claims 2 and 4-8 were not obvious at the time of invention over Soileau et al. '765 in view of Grove '182. Applicant respectively requests allowance thereof.

2. Claim 32-35.

The Examiner rejected claim 32 over Soileau et al. '765 in view of Grove '182. Claim 32 defines an electromagnet assembly for a brake including, among other things, a friction material comprising a polymeric donor material mixed therewith, the powder metal housing having a rim with a thickness of between about 0.127 inches and about 0.400 inches.

This rejection is respectfully traversed for substantially the same reasons as with regard to allowable claim 1. In addition, neither Soileau et al. '765 nor Grove '182 provides any suggestion or motivation to modify or combine their structures to arrive at the claimed invention. Namely, neither reference teaches any reason to add a polymeric donor material to the frictional material. Notably, there are reasons not to add a polymeric donor material as Soileau et al. '765 teaches coating the particles with a polymer that flows under pressure and that includes another overcoat of silicone as discussed above.

Even if the references are combined, there is no reasonable expectation of success. As discussed above with regard to claim 1, the references cannot be combined to arrive at the claimed invention. This is in great part due to the fact that the references do not teach or suggest all of the claim limitations as required for the third criteria for the test for obviousness. Namely, neither Soileau et al. '765 nor Grove '182 discloses a frictional material comprising a polymeric

donor material mixed therewith. In addition, neither reference discloses a powder metal housing having a rim with a thickness of between of about 0.127 inches and about 0.400 inches. Therefore, Applicant respectfully submits that claim 32 cannot be rendered obvious over Soileau et al. '765 in view of Grove '182 and further, is in condition for allowance.

Dependent claims 33-35 are dependent on allowable independent claim 32 and are allowable for that reason. Moreover, Applicant respectfully submits that these claims are allowable since they define not obvious combinations of the subject matter of claim 32. Therefore, Applicant respectfully submits that the invention of claims 33-35 is not obvious over Soileau et al. '765 in view of Grove '182.

3. Claims 36-39.

Claim 36 was rejected as being obvious over Soileau et al. '765 in view of Grove '182. This claim is traversed for substantially the same reasons as with regard to allowable base claim 1. Further, neither Soileau et al. '765 nor Grove '182 disclose an electromagnetic having a magnetic cross section that is constant to within plus or minus 3%. Therefore, Applicant respectfully submits that base claim 36 cannot be rendered obvious over Soileau et al. '765 in view of Grove '182 and is therefore in condition for allowance. Further, dependent claims 37-39 are dependent on base claim 36 and are allowable for that reason. Moreover, Applicant respectfully submits that these claims are allowable since they define non-obvious combinations of the subject matter of claim 36. Consequently, Applicant respectfully submits that claims 36-39 are in condition for allowance.

4. Claims 40-43.

The Examiner rejected claim 40 over Soileau et al. '765 in view of Grove '182. Applicant respectfully traverses this rejection for substantially the same reasons as with regard to claim 1. Further, neither Soileau et al. '765 nor Grove '182 disclose a yield strength of the powder metal core of being between 18.5 ksi and about 50 ksi wherein the powder metal core is adapted to maximize the rigidity of the electromagnet. Therefore, Applicant respectfully submits that claim 40 cannot be rendered obvious over Soileau et al. '765 in view of Grove '182 and respectfully requests allowance of claim 40.

Claims 41-43 are dependent on allowable base claim 40 and are allowable for that reason. Moreover, Applicant respectfully submits that these claims are allowable since they define non-obvious combinations of the subject matter of claim 40. Therefore, Applicant respectfully submits that claims 41-43 cannot be rendered obvious over Soileau et al. '765 in view of Grove '182 and respectfully request allowance thereof.

5. New Claims 44-48.

Claims 44-48 have been added and Applicant respectfully requests allowance of these claims as they define over and are not obvious in view of the prior art. Therefore, Applicant respectfully request allowance of claims 44-48.

Applicant : William E. Richeson
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It is believed that the above represents a complete response to the official Office Action and reconsideration is requested, specifically, Applicant respectfully submits that the application is in condition for allowance and respectfully request allowance thereof.

Respectfully submitted,

WILLIAM E. RICHESON

By: PRICE, HENEVELD, COOPER,
DEWITT & LITTON, LLP

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Date

Eugene J. Rath III
Eugene J. Rath III
Registration No. 42 094
695 Kenmoor, S.E./Post Office Box 2567
Grand Rapids, Michigan 49501
(616) 949-9610

EJR/JAP/tp